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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,004	04/17/2001	Masataka Kondo	81846.0026	1067

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EXAMINER
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MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/837,004	<b>Applicant(s)</b> KONDO ET AL. 	
	<b>Examiner</b> Karla Moore	<b>Art Unit</b> 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 July 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,370,356 to Bok et al. in view of Japanese Patent No. 03-142930 A to Ogushi et al.

4. Bok et al. disclose an apparatus for manufacturing a semiconductor device having a thin film on a substrate substantially as claimed and comprising: a washing section (see Figure 4, step 1) for washing the substrate with a washing liquid; a liquid removing section for removing the washing liquid from the substrate by blowing compressed air to the substrate washed (see Figure 4, step 2); and a film forming section (see Figure 4, step 4) for forming a thin film on the substrate from which the washing liquid has been removed.

5. However, Bok fails to teach the liquid removing section as capable of removing a washing liquid from the substrate by blowing pre-heated compressed air to the washed substrate.

6. Ogushi et al. disclose a liquid removing section capable of removing a washing liquid from the substrate by blowing pre-heated compressed air to the washed substrate for the purpose of removing contamination and thus obtaining highly reliable wafers (abstract).

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7. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a liquid removing section capable of removing a washing liquid from the substrate by blowing pre-heated compressed air to the washed substrate in Bok et al. in order to remove contamination and thus obtain highly reliable wafers as taught by Ogushi.

8. With respect to claim 9, the washing section comprises a brush washing section, a rinse section and an ultrasonic washing section in which the substrate is washed.

9. Claims 10-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bok et al. and Ogushi et al. as applied to claims 8 and 9 above, and further in view of U.S. Patent No. 4,017,982 to Goffredo.

10. Bok et al. and Ogushi et al. disclose the invention substantially as claimed and as described above.

11. However, Bok et al. and Ogushi et al. fail to teach the liquid removing section has an air knife which is inclined to the direction perpendicular to a transfer direction of the substrate and the vertical direction so as to blow air to the back of the substrate transfer direction. Nor do Bok et al. disclose a heater for heating compressed air to be supplied to the air knife or the apparatus comprising at least two air knives located above and below the substrate to be transferred, inclined to the direction perpendicular to the substrate transfer direction and arranged such that the closest ends of adjacent air knives are spaced apart at a predetermined interval in the substrate transfer direction and overlap for a predetermined distance in the direction perpendicular to the substrate transfer direction.

12. Goffredo teach the use of a plurality of heated air knives located above and below the substrate to be transferred, inclined to the direction perpendicular to the substrate transfer direction and arranged such that the closest ends of adjacent air knives are spaced apart at a predetermined interval in the substrate transfer direction (horizontally adjacent air knives in Figure 1) and overlap for a predetermined distance in the direction perpendicular to the substrate transfer direction (vertically adjacent air knives in Figure 1) for the purpose of removing a liquid film from a substrate(see abstract).

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13. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided knives arranged as described above in Bok et al. and Ogushi et al. in order to remove a liquid film from a substrate as taught by Goffredo.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bok et al. and Ogushi et al. as applied to claims 8 and 9 above, and further in view of U.S. Patent No. 6,406,541 to Cairncross et al.

15. Bok et al. and Ogushi et al. disclose the invention substantially as claimed and as described above.

16. However, Bok et al. and Ogushi et al. fail to teach the apparatus comprising an ionizing section for ionizing compressed air supplied to the air knife.

17. Cairncross et al. teach the use of an ionizing air knife for the purpose of neutralizing electrostatic charges (column 1, rows 54-55 and column 16, rows 10-15).

18. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an ionizing air knife in Bok et al. and Ogushi et al. in order to neutralize any electrostatic charges present on the substrate as taught by Cairncross et al.

19. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bok et al. and Ogushi et al. as applied to claims 8 and 9 above, and further in view of U.S. Patent No. 5,769,952 to Komino et al.

20. Bok et al. and Ogushi et al. disclose the invention substantially as claimed and as described above.

21. However, Bok et al. and Ogushi et al. fail to disclose a load lock chamber for heating the substrate to a predetermine temperature before the film is formed in the film forming chamber.

22. Komino et al. teach the use of a load lock chamber for use before a film forming process for the purpose of shortening the heating time required to reach a treatment temperature (column 7, rows 10-32).

23. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a load lock chamber for heating a substrate to a predetermined temperature

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before a film is formed in the film forming chamber in Bok et al. and Ogushi et al. in order to shorten the heating time required to reach a treatment temperature as taught by Komino et al.

24. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bok et al. and Ogushi et al. as applied to claims 8 and 9 above, and further in view of Japanese Patent 02-019470 A to Fujioka.

25. Bok et al. and Ogushi et al. discloses the invention substantially as claimed and as described above.

26. However, Bok et al. and Ogushi et al. fail to teach depositing a film using a first pipe for supplying a material gas and a second pipe for supplying an inert gas, which is ionized into a plasma before a film is formed in the film forming chamber.

27. Fujioka teaches using a first pipe (Figure 1, 111) for supplying a material gas and a second pipe (105) for supplying an inert gas, which is ionized into plasma for the purpose of enabling the formation of a deposition film having quality and for the purpose of obtaining the film with good efficiency (abstract).

28. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a first pipe for supplying a material gas and a second pipe for supplying an inert gas which is ionized into a plasma in Bok et al. and Ogushi et al. in order to enable the formation of a deposition film having quality and in order to obtain the film with good efficiency as taught by Fujioka.

#### ***Response to Arguments***

29. Applicant's arguments with respect to claims 8-14 have been considered but are moot in view of the new ground(s) of rejection. New art has been cited and used in the above rejections of the newly amended claims to remedy the deficiency of Bok et al. as a result of new amendment to the claims (a liquid removing section capable of blowing pre-heated compressed air).

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**Conclusion**

30. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571.272.1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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29 September 2004

  
Parviz Hassanzadeh  
Primary Examiner  
Art Unit 1763